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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/092,476	03/08/2002	Rikuro Obara	2523-074	1201

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EXAMINER	
MOHANDESI, IRAJ A	

ART UNIT	PAPER NUMBER
2834	

DATE MAILED: 12/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/092,476	OBARA, RIKURO	
	Examiner	Art Unit	
	Iraj A Mohandesi	2834	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 November 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,5-10,12 and 13* is/are rejected.

7)☒ Claim(s) *3,4,11 and 14* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☒ Other: technical spec. attachment

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1,9,10 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chuta US patent 5,138209 in view of Torrant 3,986,754.

Chuta'209 discloses a motor having a rotational member (126) supported through a bearing device(110) provided on a base member (105) of the motor ,the bearing device comprising upper and lower ball bearings each of which includes an inner ring (114) fit around a shaft (108) of the motor ,an outer ring (118) and a plurality of balls (122,124) interposed there between ,the bearing device further comprising ,a spacer (125) interposed between the outer ring of the upper and lower ball bearing (see Fig.1), spacer (125) inherently press fit(see Fig.1) .

Chuta'209 teaches all limitation of the claimed invention except for a spacer made of material larger in its coefficient of linear expansion than of the upper and lower outer rings.

Torrant'754 disclosed a bearing having a spacer (20) of material larger in its coefficient of linear expansion than of the upper and lower outer rings (see column 2,lines 25-35 Fig. 3 spacer 20 is between the upper and lower outer races), for the purpose of thermal

expansion with respect to the upper and lower race to provide a proper axial and radial fit.

The examiner takes official notice ,that Torrant's hard metal upper and lower outer rings 41/42 have a smaller linear coefficient of thermal expansion than the soft metal spacer (20 column 2,line 25-35, Fig. 3).

Therefor it would be obvious to one having ordinary skill in the art at the time the invention was made to combine Chuta'209 motor a spacer having material larger in its coefficient of linear expansion than of the upper and lower outer rings as taught by Torrant'754 for the purpose mentioned above.

3. Claims 2 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Obara US patent 5,828,150 in view of Torrant'754.

Obara"150 discloses a motor having a rotational member (10) supported through a bearing device provided on a base member (9) said bearing device comprising; a stepped shaft (1) including a larger diameter shaft portion (2a) around which an inner raceway (2a) is formed directly thereon and a reduced diameter shaft portion (1b) a ball bearing including an inner ring (5a) fit around the reduced diameter shaft portion (see Fig.1) and an outer ring (5b), an outer ring surrounding the inner ring raceway provided around the a plurality of larger diameter shaft portion, a plurality of balls (6) balls interposed between the inner ring raceway and the outer ring raceway formed on the inner h l surface of the outer ring and a spacer (7) interposed between the outer ring of the ball bearing and the outer ring provided around the larger diameter shaft portion;

Obara"150 teaches all limitation of the claimed invention except for a spacer made of material larger in its coefficient of linear expansion than of the upper and lower outer rings.

Torrant'754 disclosed a bearing having a spacer (20) of material larger in its coefficient of linear expansion than of the upper and lower outer rings (see column 2,lines25-35 ,Fig.3), for the purpose of flexibility with respect to the upper and lower race to provide a proper axial fit.

The examiner takes official notice ,that Torrant's hard metal upper and lower outer rings 41/42 have a smaller linear coefficient of thermal expansion than the soft metal spacer (20 column 2,line 25-35, Fig. 3).

Therefor it would be obvious to one having ordinary skill in the art at the time the invention was made to combine Obara"150 motor a spacer having material larger in its coefficient of linear expansion than of the upper and lower outer rings as taught by Torrant'754 for the purpose of flexibility with respect to the upper and lower race to provide a proper axial fit.

4. Claims 5-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Obara"150 and Torrant'754 as applied to claims 1-4 above, and further in view of Gonser US patent 4,966,552.

Obara"150 and Torrant'754 don not teach a rotary instrument having roller bearing made of ceramic,

Regarding claims 5-8,Gonser'552 disclosed a rotary instrument having roller bearing made of ceramic for the purpose of non-lubricant bearing.

Therefor it would be obvious to one having ordinary skill in the art at the time the invention was made to modify Obara"150 Torrant'754 motor with a ceramic bearing as taught by Gonser'552 for the purpose of non-lubricant bearing.

Allowable Subject Matter

5. Claims 3,4 ,11and 14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. The following is a statement of reasons for the indication of allowable subject matter:

7. The prior art of the record in particular Chuta US patent 5,138209 in view of Torrant 3,986,754 combined Obara US patent 5,828,150 and Gonser US patent 4,966,552 do not teach a supporting structure for a motor having low expansion rings made of material lower in its coefficient of linear expansion than that of the outer rings ,which are press fit around the outer periphery of each outer ring of the bearing device

Response to Arguments

8. Applicant's arguments filed 03/02/2004 have been fully considered but they are not persuasive.

9. Chuta'209 in combination with Torrant'754 clearly teaches all claimed limitations of claims 1,3,4.

Chuta'209 discloses a rotational member (126), a bearing device (110), a base member (105), an inner ring (114, 116), a shaft (108), an outer ring (118) and a plurality of balls

(122,124), a spacer (125) and Torrant'754 teaches a bearing having a spacer (20) of soft material, which has inherently a larger in its coefficient of linear expansion. Ring 20 is made of soft metal and the races 41, 42 are hard metal. According to the attached document the soft metal such as Aluminum and Brass have higher linear coefficient of thermal expansion than steel. Torrant'754'races of ball bearing are made of hard material such as ceramic or stainless steel.

Not; as the references showed above, the Principe of using a softer material with larger thermal expansion coefficient is known to art for preventing the looseness of ball bearing due to expansion of the race by increasing temperature.

Regarding claim 2,5-8.

Obara"150 combined with Torrant'754 modified by Gonser'552 clearly teaches all claimed limitations of claims 2,5-8 as descried above.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Iraj A Mohandesi whose telephone number is 571-272-2028. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Darren Schuberg can be reached on 571-272-2044. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

IM December 3, 2004

DARREN SCHUBERG
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800